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The Job Outlook in Brief

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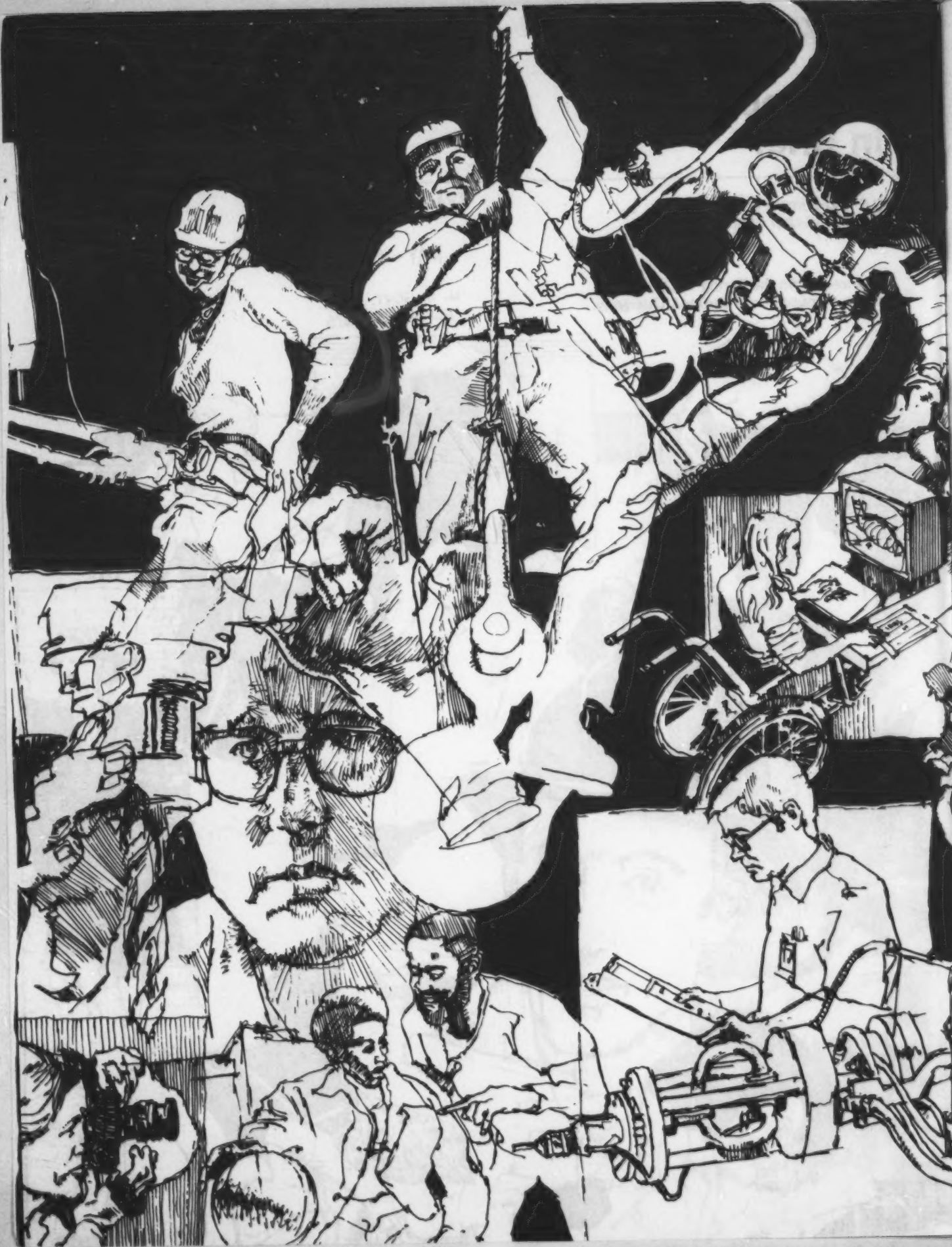
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The Job Outlook in Brief

by
Tom Nardone

What will the jobs of tomorrow be? How many workers will be needed to repair robots or program computers? Will bookkeepers and assembly-line workers disappear? The answers to these questions are hard to come by. They can also be misleading. For example, concentrating on emerging occupations or even the fastest growing ones gives only a partial picture of the jobs that will be available in the future. Tomorrow's economy, like today's, will require workers in many different occupations. The number and kinds of workers needed will depend on the interplay of demographic, economic, social, and technological factors. By analyzing the changing nature of the economy and the factors that cause these changes, the Bureau of Labor Statistics develops projections of future demand for many occupations. The Bureau's latest information for almost 200 occupations is presented here.

The "Job Outlook in Brief" presents the following information:

- The number of workers employed,
- the change in employment projected to occur between 1982 and 1995,
- and, when possible, the prospects for finding jobs.

The information in the "Brief"—which is revised every 2 years—is

meant to help counselors and students and others preparing for careers. While job outlook information is only one factor jobseekers need to consider when looking at occupations, it can help them prepare for the conditions they will face when seeking employment.

Before checking out individual occupations that interest you, look over the next few pages. They discuss factors that affect employment in an occupation—such as the demand for goods and services—describe the assumptions used in making the projections, give an overview of the employment outlook through the mid-1990's in each of 16 occupational groups, and describe the content and organization of the "Brief."

The number of workers employed in any occupation depends in part on the demand for the goods or services provided by those workers. Over the last 10 years, for example, increased use of computers by businesses, schools, scientific organizations, and government agencies contributed to large increases in the number of systems analysts, programmers, and computer operators. Even if the demand for goods and services provided by a group of workers rises, however, employment may not increase or may increase more slowly than demand because of changes in the ways goods are produced and services are provided. In fact, some changes in technology and business practices can cause employment to decline. During

the 1970's, improvements in methods of entering data into computers, for example, resulted in a drop in the number of keypunch operators despite the rapid growth of computer usage.

Growth of employment in an occupation usually follows the growth of industries in which the occupation is concentrated. During the 1970's, the employment of nurses increased nearly three times as fast as the employment of plumbers and pipefitters. In large part this occurred because most nurses are employed in the rapidly growing health services industry while most plumbers and pipefitters are employed in the slower growing construction industry.

Using information on the demand for goods and services, advances in technology, changes in business practices, and occupational composition of industries, economists at BLS have estimated the number of workers that will be employed in 1995 by occupation. To make these estimates, they had to make some assumptions about the future. By varying assumptions about growth of the labor force, output, productivity, inflation, and unemployment, the Bureau has developed three different pictures of the economy in 1995. Referred to as the low growth, moderate growth, and high growth scenarios, each provides a different 1995 employment estimate for most occupations.

It should be noted that the scenarios represent only three of many possible

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courses for the economy. Different assumptions would lead to different projections. For this reason, the scenarios should not be viewed as the bounds of employment growth. Rather, they illustrate what might happen under different assumptions about future economic conditions. Furthermore, unforeseen changes in technology or in spending patterns for defense or health care, for example, could radically alter the projections for individual occupations. It also should be noted that the outlook for any occupation varies considerably among local job markets. For example, sections of the country that have slow population growth will usually have less need for elementary school teachers than regions that have high growth. Information on conditions in different areas may be available from local Job Service Centers.

For ease of presentation, all data in the "Brief" come from the moderate growth scenario. This scenario is characterized by a period of recovery from the 1981-82 recession followed by stable economic growth through the mid-1990's. More information about the assumptions underlying the projections and the methods used to develop the projections—along with some of the actual projections—appears in "The Economy in 1995," which appears elsewhere in this issue of the *Occupational Outlook Quarterly*. A series of articles in the November 1983 issue of the *Monthly Labor Review* presents even greater detail on these subjects.

Employment trends for 16 groups of occupations are discussed below. However, within each of the 16 groups, the employment prospects in individual occupations will differ. Consequently, it is important to check the outlook for each occupation that interests you. While the "Brief" contains informa-

tion for only the 190 or so occupations described in detail in the 1984-85 edition of the *Occupational Outlook Handbook*, current and projected employment estimates for many more occupations—nearly 700 in all—are available from the BLS Industry-Occupation Employment Matrix and will be presented in the 1984 edition of *Occupational Projections and Training Data*, BLS Bulletin 2206, a companion to the *Handbook* scheduled for publication in May 1984.

In addition, employment growth is only one source of job openings. Another is replacement needs. When workers leave the labor force or change occupations, they create openings in their old occupations. Because of replacement needs, many large, slow-growing occupations actually have many job opportunities. More information about occupational replacement needs is available in *Occupational Projections and Training Data*.

Employment Through 1995

Through the mid-1990's, employment is expected to increase in almost all occupations. Between 1982 and 1995, total employment is expected to rise from 101.5 million to 127.1 million or about 25 percent; this is the rate of growth against which occupations are compared throughout this article. The following examination of 16 broad groups of occupations gives an overview of employment opportunities through the mid-1990's. The groups are based on the Standard Occupational Classification (SOC) system. The half dozen phrases used to describe employment growth are explained in the box, "Key Words in the Brief."

Administrative and managerial occupations. Workers in these occupations direct and control the activities of businesses, government agencies, and other organizations, or provide techni-

cal support to workers who do. In most of these occupations, employment is expected to increase about as fast as the average for all occupations. Although managers and administrators are employed throughout the economy, differences in industry expansion will result in different employment growth among industries. Employment of managers in the health industry, for example, is expected to increase much faster than the average due to the growth of the industry and the emergence of new types of health service organizations, such as group medical practices and surgical centers. Employment growth also should be as fast as or faster than average in electronic components manufacturing, data processing services, credit and securities firms, automotive repairs, and social services. In contrast, managerial employment in government and educational services is likely to grow more slowly than average due to the modest growth anticipated for these industries.

Due to the increasing number of people seeking managerial and administrative jobs and the increasing technical requirements in many of these occupations, experience, specialized training, or postbaccalaureate study will be needed for many managerial jobs. Familiarity with computers also will be helpful as managers and administrators increasingly rely on computerized information systems to direct their organizations.

Engineers, scientists, and related occupations. Workers in these occupations design buildings, machinery, products, and systems, conduct research, and perform related activities. Employment in many of the occupations in this group is expected to increase faster than the average; in several—electronic engineers, mechanical engineers, systems analysts—it will increase much faster than the average.



Increased military expenditures, growing demand for computers and other electronic equipment, expansion and automation of industrial production, and development of energy sources are some of the factors expected to lead to higher employment in engineering occupations. The growing application of computers in business and research will contribute to increased employment of systems analysts. Research to expand basic knowledge, develop new technologies and products, and protect the environment is expected to lead to higher employment in many scientific and engineering occupations. However, competition in some smaller occupations that are dependent on government funding, such as astronomer, will continue to be keen. And, if the rate of economic growth and actual research and development levels differ from those assumed, the job outlook in many of these occupations would be altered.

Social science, social service, and related occupations. In these occupations, workers provide direct social services and conduct applied research into the behavior of individuals, groups, and society at large. Employment in many of the occupations in the group is expected to grow about as fast as the average. However, due to the number of people interested in these fields, competition for jobs is expected in many social science occupations—especially for academic positions. Generally, prospects will be better for social scientists with advanced degrees who seek work in applied fields.

Competition also is likely for jobs as social and recreation workers in public and voluntary agencies as well as for salaried positions for lawyers due to the number of people likely to pursue careers in those fields.

Teachers, librarians, and counselors. Workers in these occupations help peo-

ple learn, acquire information, or gain insight into themselves. Because of anticipated enrollment declines and an abundance of qualified jobseekers, competition is expected for jobs in college and university teaching, librarianship, and counseling. Staff cutbacks in school systems and social service agencies will intensify competition for jobs.

Job prospects for elementary school teachers are expected to be more favorable than in recent years because school enrollments should start increasing after 1985. Through 1990, competition is expected for jobs in secondary schools. After 1990, job prospects in secondary teaching may improve as enrollments in these schools begin to increase. Teachers and librarians in scientific and technical fields generally will face better job prospects throughout the next decade.

Health-related occupations. This group includes health practitioners, nurses, health technicians and technologists, health service workers, dietitians, pharmacists, and therapists. Workers in these occupations care for the sick, help the disabled, and advise individuals and communities on ways of maintaining and improving their health.

Employment in most of the health occupations is expected to grow faster than the average as population growth—especially the growth in the number of older people—increases the demand for health care. Registered nurses and nursing aides and orderlies, because of their number and anticipated growth, will be among the occupations providing the most new jobs through the mid-1990's. Despite the anticipated growth in the health industry, unprecedented competition is expected for physicians, dentists, chiropractors, and veterinarians seeking to establish practices due to the large number of newly trained practitioners entering those fields each year.

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It should be noted that the projections are based on the assumption that past trends in expenditures for health care will continue and that the ways used to pay for health care (principally private and public insurance plans) will not undergo drastic change. However, current efforts to control health costs may result in substantial changes in the reimbursement procedures, directly affecting economic incentives to suppliers of health care. Such changes could lower the projected employment levels in many health occupations.

Writers, artists, and entertainers. This group includes reporters, writers, designers, public relations specialists, and performing artists. In most of the occupations in this group, employment is expected to increase as fast as the average for all occupations. The continued importance of advertising, public relations, print and broadcast communications, and entertainment will spur the growth of these occupations.

Stiff competition for jobs in these occupations is likely, due to the large numbers of people they attract; talent, personal drive, and luck will continue to play an extremely important role in succeeding in these occupations. Within individual occupations, some areas will offer better job prospects. The best prospects for writers and editors will be in technical and business writing.

Technologists and technicians. Workers in this group provide technical assistance to engineers, scientists, and other professional workers as well as operate and program technical equipment independently. The continued growth in the importance of technology to national defense, office work, manufacturing, and other activities is expected to cause much faster than average employment growth for several occupations in this group, such as legal assistants, programmers, and electrical and electronic technicians.

Legal assistants and programmers are two of the fastest growing occupations.

Employment growth in some of the occupations will be limited by changes in technology. Little or no change in employment of drafters is expected because of the increasing use of computer-aided design equipment. Similarly, little or no change in employment of air traffic controllers is expected due to the automation of air traffic control equipment.

Marketing and sales occupations. Workers in this group of occupations sell goods and services. Employment of travel agents, securities sales workers, real estate agents, and wholesale trade sales workers is expected to grow faster than the average due to the anticipated growth of the travel, securities, real estate, and wholesale trade industries.

A large number of part-time and full-time job openings are expected for cashiers and retail trade sales workers due to their number, high turnover, and employment growth. Higher paying sales occupations, such as insurance agent and real estate agent, tend to be more competitive than retail sales occupations. Well-trained and ambitious people who enjoy selling will have the best chance for success in the smaller occupations.

Administrative support occupations, including clerical. Workers in this group prepare and record memos, letters, and reports; collect accounts; gather and distribute information; operate office machines; and handle other administrative tasks in businesses, government agencies, and other organizations. Some administrative support occupations will grow much faster than the average. Computer operators and peripheral equipment operators, for example, will be among the fastest growing occupations due to the increased use of computer systems.

Several occupations in this group

will have many full- and part-time job openings due to their large size and high turnover. These include bank tellers, bookkeepers and accounting clerks, secretaries, shipping and receiving clerks, and typists.

The increased use of office automation systems, on the other hand, will limit employment growth in some administrative support occupations. Employment of typists, for example, is expected to grow more slowly than the average. Changes in organizational practices will also affect employment growth for some of the occupations in this group. Despite a growing volume of mail, little change is expected in the employment of mail carriers because of improved routing programs and more centralized mail delivery.

Service occupations. This group includes a wide range of workers in protective, food and beverage preparation, cleaning, and personal services. Among the protective service occupations, guards are expected to increase faster than average because of growing concern over crime and vandalism. However, the anticipated slow growth of local government spending is expected to result in slower than average employment growth for police officers and firefighters.

Rising incomes, increased leisure, and the growing number of men and women who combine family responsibilities and a job are expected to contribute to faster than average employment growth among food and beverage preparation service occupations. Due to the large size, high turnover, and growth of many food service occupations—such as bartenders and waiters and waitresses—full- and part-time job openings will be plentiful.

Agricultural and forestry occupations. Workers in these occupations produce goods that meet the country's needs for food, clothing, and shelter.



Although demand for food, fiber, and wood is expected to increase as the world's population grows, the development and use of more productive farming and forestry methods are expected to result in declining employment in most agricultural and forestry occupations.

Mechanics and repairers. Workers in this group of occupations adjust, maintain, and repair automobiles, industrial equipment, computers, and many other types of machinery. Employment in most of the occupations in this group is expected to grow about as fast as the average due to the continued importance of machines in industries and homes. In some, employment will increase faster than the average. The increased use of computers and advanced office machinery, for example, will make computer service technicians and office machine repairers two of the fastest growing occupations. For some mechanic and repairer occupations, such as communication equipment mechanics, improvements in machinery will lower maintenance requirements and limit employment growth.

Construction occupations. Workers in this group construct, alter, and maintain buildings and other structures. Employment in most of the occupations in this group is expected to

grow faster than the average. Some of this growth, however, reflects a rebounding of employment to levels that existed before the 1981-82 recession. Increases in the population and the number of households and a rise in spending for new industrial plants are expected to lead to more new construction. Alteration and modernization of existing structures, as well as the need for maintenance and repair on highway systems, dams, and bridges also will contribute to increased construction activity.

Continued technological developments in construction methods, equipment, and materials will limit employment growth by raising the productivity of workers. One important development, for example, is continued growth in the use of prefabricated materials. The use of these materials limits the number of workers needed at the construction site.

Because the construction industry is sensitive to changes in the Nation's economy, employment in construction occupations fluctuates from year to year. Construction workers experience periods of unemployment during downturns in construction activity.

Production occupations. Workers in this group of occupations perform tasks involved in the production of

goods. They set up, adjust, operate, and tend machinery and equipment, and use handtools and hand-held power tools to fabricate and assemble products.

The recovery of the manufacturing industry from the 1981-82 recession and the growth projected for this sector through the mid-1990's will result in average employment growth in many production occupations. For some, such as patternmaker and job and die setter, most of the employment growth reflects a rebounding of employment to prerecession levels. Changes in production techniques and the increased use of automated machinery, such as robots, will prevent employment in some production occupations from rising as rapidly as the output of goods.

Many production occupations are sensitive to fluctuations in the business cycle. As factory orders decline during economic downturns, workers may face shortened workweeks, layoffs, and plant closings.

Transportation occupations. Workers in this group operate the equipment used to move people and materials. Rising levels of economic activity will increase the need for transport services. This increase in demand is expected to result in average employment growth for truckdrivers and airplane pilots. Increased use of automated material handling systems, however, is expected to cause slower than average employment growth for industrial truck operators.

Handlers, equipment cleaners, helpers, and laborers. Workers in the occupations in this group assist skilled workers and perform routine tasks required to complete a project. Jobs in these occupations generally are expected to be plentiful due to the high turnover rate. However, economic downturns can substantially lower the

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number of openings. This is particularly true for construction laborers and other workers in industries that are sensitive to changes in the Nation's economy. Over the long run, as routine tasks are mechanized, employment in these occupations is expected to grow more slowly than the average.

Information in the "Brief"

The "Brief" has five columns. The first gives the occupation's title and the second the estimated employment in 1982. The third and fourth contain the percent and absolute change in employment projected between 1982 and 1995 according to the moderate scenario. The fifth, "Employment Prospects," summarizes job prospects for the occupation. As mentioned earlier, the growth of individual occupations is compared to the national average using half a dozen phrases. These phrases are explained in the box, "Key Words in the Brief."

The prospects for getting the job depend not only on the number of openings but also on the number of people looking for that kind of job. The words and phrases used in "Employment Prospects" to describe the amount of competition that jobseekers are likely to encounter are also defined in the box, "Key Words in the Brief." Assessing the degree of competition in occupations is difficult. For occupations with lengthy training and strict entry requirements, it can be done with some accuracy. But, for most occupations, requirements are flexible and entry is possible through several routes. In such cases, it is difficult to measure the potential supply of workers and it is not meaningful to talk about shortages and surpluses.

Like the *Occupational Outlook Handbook* on which it is based, the "Brief" is arranged in the following clusters of related jobs:

Key Words in the "Brief"

Changing Employment Between 1982 and 1995

If the statement reads . . .	Employment is projected to . . .
Much faster than average growth	Increase 50 percent or more
Faster than average growth	Increase 30 to 49 percent
Growth about as fast as average	Increase 20 to 29 percent
Growing more slowly than average	Increase 6 to 19 percent
Little change	Increase or decrease 5 percent
Decline	Decrease 6 percent or more.

Opportunities and Competition for Jobs

If the statement reads . . .	The demand for workers may be . . .
Excellent opportunities	Much greater than the supply
Very good opportunities	Greater than the supply
Good or favorable opportunities	About the same as the supply
May face competition	Less than the supply
Keen competition	Much less than the supply

- Administrative and managerial;
- engineers, surveyors, and architects;
- natural scientists and mathematicians;
- social scientists, social workers, religious workers, and lawyers;
- teachers, librarians, and counselors;
- health practitioners;
- registered nurses, pharmacists, dietitians, therapists, and physicians' assistants;
- health technologists and technicians;
- writers, artists, and entertainers;
- technologists and technicians, except health;
- marketing and sales;
- administrative support, including clerical;
- service;
- mechanics and repairers;
- construction;
- production;
- transportation and material moving; and
- helpers, handlers, equipment cleaners, and laborers.

(An index appears on page 25.)

The "Brief" provides outlook information in a format that allows you to compare job prospects in different fields easily. But employment prospects should never be the sole reason for choosing a career. Matching your goals and abilities to the work done on the job and the education required is an important part of the selection process. Where you want to live and how much money you want to earn also are important. The 1984-85 *Occupational Outlook Handbook* provides this type of information for nearly 200 occupations. You can purchase a copy from one of the regional offices of the Bureau of Labor Statistics—their addresses are listed on the inside front cover of this magazine—or use the copies usually available in libraries and the offices of school guidance counselors and employment counselors. The *Handbook* costs \$8.50.

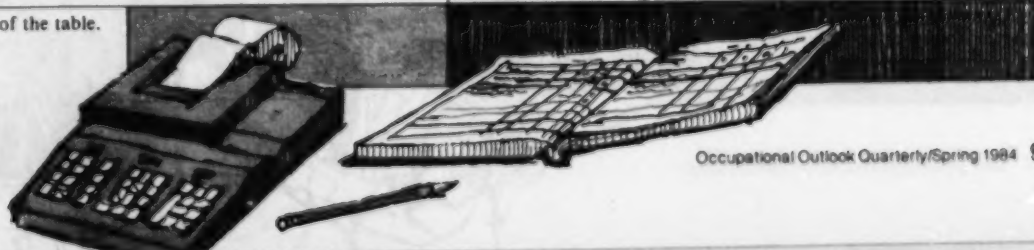
Choosing a career is a difficult task. The more information you have about the world of work, the easier it will be.

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The Job Outlook in Brief

CLUSTER Subgroup Occupation	Estimated employment 1982 ¹	Percent change in employment 1982-95 ¹	Numerical change in employment 1982-95 ¹	Employment prospects
ADMINISTRATIVE AND MANAGERIAL OCCUPATIONS				
Accountants and auditors	856,000	40	344,000	Employment expected to increase faster than average as managers rely more on accounting information to make business decisions. College graduates will be in greater demand than applicants who lack this training.
Bank officers and managers	424,000 ²	45	193,000	Employment expected to grow faster than average as banks expand services. Competition for managerial positions likely to stiffen. Familiarity with computers and other data processing equipment may enhance employment opportunities.
Buyers, retail and wholesale trade	256,000	30	76,000	Employment expected to grow about as fast as average. However, keen competition anticipated because merchandising attracts large numbers of college graduates.
Construction inspectors, public administration	39,000	17	6,800	Employment expected to grow more slowly than the average despite the anticipated increase in construction activity. Best prospects for highly experienced craft workers who have some college training or who are certified.
Health services administrators	303,000 ¹	58	175,000	Employment expected to grow much faster than average as health industry expands and management becomes more complex. Management experience or a graduate degree in health administration, business, finance, information management, or a related field is required for many jobs.
Health and regulatory inspectors	101,000	7	6,600	Employment expected to grow more slowly than the average as government programs and spending increase modestly.
Hotel managers and assistants	67,000 ²	23	15,000	Employment expected to grow about as fast as average. Best opportunities for persons with a degree in hotel administration.
Personnel and labor relations specialists	203,000	23	47,000	Employment expected to grow about as fast as average as employers implement human resource development and other employee programs to raise productivity. Keen competition for jobs in labor relations.
Purchasing agents	191,000	27	52,000	Employment expected to grow about as fast as the average. Best opportunities for persons with a master's degree in business administration; graduates of 2-year programs in purchasing should find good opportunities in small firms.
School administrators	133,000	15	20,000	Employment expected to grow more slowly than average. Competition expected as other school personnel attempt to move into administrative jobs.
Underwriters	76,000	21	16,000	Employment expected to grow about as fast as average as insurance sales continue to expand and insurance companies introduce new types of insurance and evaluate risks more frequently.

Notes appear at the end of the table.



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CLUSTER Subgroup Occupation	Estimated employment 1982'	Percent change in employment 1982-95'	Numerical change in employment 1982-95'	Employment prospects
ENGINEERS, SURVEYORS, AND ARCHITECTS				
Architects	84,000	40	33,000	Employment expected to rise faster than average. However, growth may not be as fast as in previous years due to increased use of computers and lower foreign demand for U.S. architectural services. Keen competition is expected for jobs in the most prestigious firms.
Surveyors	44,000	43	19,000	Employment expected to grow faster than average due to increased construction activity.
Engineers				
Engineers	1,204,000'	49	584,000	Employment expected to grow faster than average. More engineers will be needed to design industrial plants and equipment, develop defense-related products, and improve transportation systems. Good employment opportunities for graduates with an engineering degree.
Aerospace engineers	44,000	41	18,000	Employment expected to increase faster than average due to increased expenditures for military and commercial aircraft.
Chemical engineers	56,000	43	24,000	Employment expected to grow faster than the average. Economic expansion and increasing complexity and automation of chemical processes will require additional chemical engineers to design, build, and maintain plants and equipment.
Civil engineers	155,000	47	73,000	Employment expected to increase faster than average. Population and economic growth will increase the need for civil engineers to design and construct transportation systems, manufacturing plants, and other structures.
Electrical engineers	320,000	65	209,000	Employment expected to increase much faster than average due to growing demand for computers, communications equipment, military electronics, and electrical and electronic consumer goods.
Industrial engineers	160,000	42	67,000	Employment expected to grow faster than average due to industry growth, increasing complexity of industrial operations, expansion of automated processes, and greater emphasis on scientific management and safety engineering.
Mechanical engineers	209,000	52	109,000	Employment expected to increase much faster than average due to growing demand for industrial machinery as well as the need to develop new energy systems and to reduce pollution.
Metallurgical engineers	14,000	47	6,600	Employment expected to grow faster than average because of the need to develop new metals and alloys, adapt current ones to new needs, and improve ways of recycling solid waste and processing low-grade ores.
Mining engineers	5,700	22	1,300	Employment expected to grow about as fast as average as a result of efforts to attain energy self-sufficiency and to develop better mining systems.
Nuclear engineers	6,300	48	3,000	Employment expected to grow faster than average because of the need to operate nuclear power plants and to improve and enforce safety standards.
Petroleum engineers	26,000	22	5,700	Employment expected to grow about as fast as average because, as oil and gas become increasingly hard to find, more petroleum engineers will be needed to develop new sources of oil and gas and more sophisticated recovery methods.

Notes appear at the end of the table.



CLUSTER Subgroup Occupation	Estimated employment 1982'	Percent change in employment 1982-95'	Numerical change in employment 1982-95'	Employment prospects
NATURAL SCIENTISTS AND MATHEMATICIANS				
Mathematical scientists and systems analysts				
Actuaries	8,200	33	2,700	Employment expected to rise faster than average as insurance sales increase and insurance companies introduce new forms of insurance and reevaluate existing health and pension plans. Best opportunities for college graduates who have passed at least two actuarial exams while still in school and have a strong mathematical and statistical background.
Computer systems analysts	254,000	85	217,000	Employment expected to grow much faster than average as computer capabilities are increased and computers are used to solve a greater variety of problems. College graduates with courses in programming and systems analysis and training and experience in applied fields will have the best prospects.
Mathematicians	11,000	28	3,000	Employment expected to grow about as fast as average. Best opportunities for holders of advanced degrees, especially in applied mathematics and computer sciences.
Statisticians	20,000	28	5,700	Employment expected to grow about as fast as average as use of statistics expands. Persons combining knowledge of statistics with a field of application, such as engineering or physical sciences, can expect favorable job opportunities.
Physical scientists				
Chemists	89,000	22	20,000	Employment expected to grow about as fast as average. Most openings are expected to be in private industry, primarily in the development of new products. Industrial companies will need more chemists—especially biochemists—to work in biotechnology research, development, and production.
Geologists and geophysicists	49,000	24	11,000	Employment expected to grow about as fast as average due to efforts to locate new sources of energy. Best prospects for those with knowledge and experience in geophysical oil and gas exploration techniques.
Meteorologists	3,700	14	500	Employment expected to increase more slowly than average. Little or no growth in employment expected in the National Weather Service, which employs most meteorologists.
Physicists	19,000	37	6,900	Employment expected to grow faster than average. Opportunities expected to be good for Ph.D.'s
Life scientists				
Agricultural scientists	22,000	19	4,000	Employment expected to grow more slowly than average due to limited growth in government programs. Application of biotechnology to agriculture may cause rapid employment growth in research work in private industry.
Biological scientists	52,000	36	19,000	Employment expected to increase faster than average due to increased research and development in biotechnology.
Foresters and conservationists	31,000	9	2,900	Employment expected to grow more slowly than average. Employment should continue to grow faster in private industry than in Federal and State governments.



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CLUSTER Subgroup Occupation	Estimated employment 1982'	Percent change in employment 1982-95'	Numerical change in employment 1982-95'	Employment prospects
SOCIAL SCIENTISTS, SOCIAL WORKERS, RELIGIOUS WORKERS, AND LAWYERS				
Lawyers	465,000	34	159,000	Employment expected to grow faster than average as demand for legal services increases. Keen competition is likely for salaried positions. Best prospects for establishing new practices will be in small towns and expanding suburbs.
Social scientists and urban planners				
Economists	30,000	27	8,000	Employment expected to grow about as fast as average. Overall, economists have better job prospects than other social scientists. Best opportunities for those trained in quantitative methods. Ph.D.'s face competition for academic positions, but can expect good opportunities in nonacademic areas. Persons with master's and bachelor's degrees likely to face keen competition for economist jobs, but many will find research, managerial, and administrative jobs.
Psychologists	83,000	33	27,000	Employment expected to grow faster than average. Graduates face increasing competition, particularly for academic positions. Best prospects for doctoral degree holders trained in applied areas, such as clinical, counseling, health, and industrial psychology.
Sociologists	5,700	25	1,400	Employment expected to grow about as fast as average. Ph.D.'s face competition, particularly for academic positions. Best opportunities for Ph.D.'s trained in quantitative research techniques and applied sociology. Very keen competition below the Ph.D. level.
Urban and regional planners	21,000	15	3,100	Employment expected to grow more slowly than the average due to limited growth of local government spending. Best job prospects for applicants who are willing to relocate, especially to small towns or rural areas.
Social and recreation workers				
Social workers	345,000	21	71,000	Employment expected to increase about as fast as average. Keen competition in areas with many schools of social work. Best opportunities in rural areas and in areas with rapid employment growth. Market for Master's of Social Work likely to improve if the number of social work students continues to decline.
Recreation workers	124,000	23	28,000	Employment expected to grow about as fast as average as organized leisure activities increase. Strong growth foreseen in commercial recreation. Applicants for jobs in public or voluntary agencies are likely to encounter keen competition.
Religious workers				
Protestant ministers	243,000	(*)	(*)	Increasing competition is expected for positions in large congregations. Better opportunities for ministers willing to work in rural areas.
Rabbis	6,500	(*)	(*)	Favorable job prospects expected for Reform, Reconstructionist, and Conservative rabbis. Orthodox rabbis are expected to encounter keen competition.
Roman Catholic priests	58,000	(*)	(*)	Shortage of priests as supply of seminary graduates fails to keep pace with growing Catholic population.

Notes appear at the end of the table.



CLUSTER**Subgroup****Occupation****Estimated
employment
1982¹****Percent
change in
employment
1982-95¹****Numerical
change in
employment
1982-95¹****Employment prospects****TEACHERS, LIBRARIANS,
AND COUNSELORS**

Kindergarten and elementary school teachers	1,366,000	37	511,000	Employment expected to grow faster than average due to rising enrollments. Job prospects are expected to begin improving during the mid-1980's.
Secondary school teachers	1,024,000	13	128,000	Employment expected to grow more slowly than the average. Keen competition expected through early 1990's as enrollments and teacher employment decline. Opportunities should improve after 1990 as enrollments start rising. Generally favorable opportunities will exist for persons qualified to teach special education, vocational subjects, mathematics, sciences, and bilingual education.
College and university faculty	744,000	-15	-111,000	Employment expected to decrease due to declining enrollments and budgetary constraints. Keen competition in all but a few disciplines; many of the available openings will be part time or short term. Good job prospects for engineering and computer science faculty.
Counselors	148,000	10	15,000	Employment expected to grow more slowly than the average. Limited opportunities in schools. Best job opportunities expected in private practice, community and social service agencies, and personnel offices in private business.
Librarians	151,000	13	19,000	Employment expected to grow more slowly than average, but job prospects may improve if the number of library school graduates continues to decline and employment opportunities outside the traditional library setting increase. Best opportunities for librarians with scientific or technical qualifications.

**HEALTH DIAGNOSING AND
TREATING PRACTITIONERS**

Chiropractors	25,000	27	6,900	Employment expected to grow about as fast as average as chiropraxis enjoys broader public recognition. Competition may grow as the number of practitioners increases. Selection of location may become more important for establishing a successful practice.
Dentists	173,000	24	41,000	Employment expected to grow about as fast as average due to population growth, increased awareness of importance of dental care, and prepayment arrangements. Increasingly abundant supply of practitioners will make it more difficult to start a practice. Competition for patients is likely to be intense in some localities, which could adversely affect earnings.
Optometrists	28,000	25	6,900	Employment expected to grow about as fast as average due to the eye care needs of a growing and aging population, greater awareness of vision problems as a result of screening programs, and rising per capita income. Employment prospects will be favorable.
Physicians	479,000	34	163,000	Employment expected to grow faster than average as demand for health care continues to outpace overall economic growth. Despite the rise in demand, some physicians will encounter competition for patients because the number of practitioners is projected to grow substantially. Earnings may be adversely affected, and an increasing number of physicians are likely to accept salaried positions.
Podiatrists	13,000	52	6,700	Employment expected to grow much faster than average as broad public recognition of the profession causes more people to turn to podiatrists for foot care. Widespread participation in fast-moving sports, including jogging and tennis, and the growing number of elderly will also spur demand. Opportunities to establish new practices or to enter salaried positions should be favorable.
Veterinarians	36,000	30	11,000	Employment expected to grow faster than average. New veterinarians may experience competition in setting up a practice in some places, but opportunities for specialists, including toxicologists and pathologists, will be excellent.

Job Outlook

CLUSTER Subgroup Occupation	Estimated employment 1982'	Percent change in employment 1982-95'	Numerical change in employment 1982-95'	Employment prospects
REGISTERED NURSES, PHARMACISTS, DIETITIANS, THERAPISTS, AND PHYSICIAN ASSISTANTS				
Dietitians	44,000	40	18,000	Employment expected to grow faster than average in response to increasing concern for proper nutrition. Favorable opportunities, both full- and part-time, for those having appropriate training and clinical experience.
Occupational therapists	25,000	60	15,000	Employment expected to increase much faster than average due to rapidly growing demand for rehabilitation services. Job prospects should be excellent.
Pharmacists	151,000	27	41,000	Employment expected to grow about as fast as average due to the growth and aging of the population, the rapidly increasing demand for pharmacy services in health care facilities, the wider range of drug products available, and the extensive coverage for prescription drugs provided by health insurance. Employment prospects are generally favorable, but keen competition is likely in some localities.
Physical therapists	43,000	58	25,000	Employment expected to grow much faster than average because of rapidly growing demand for rehabilitation services. Job prospects expected to be very good.
Physician assistants	22,000	27	6,000	Employment expected to grow as fast as average, reflecting expansion of health industry and advanced skills required to apply complex medical technology. The number of staff jobs in hospitals is expected to grow. Although demand for new graduates remains strong, the growing supply of physicians and restrictions on payment for services of physician assistants could slow future growth.
Registered nurses	1,312,000	49	642,000	Employment expected to grow faster than average due to health care needs of a growing and aging population. Major factors spurring demand will be the complexity of hospital-based medical procedures and equipment; the rapid growth of clinics, freestanding emergency centers, surgical centers, corporate wellness centers, and other health care facilities; and staffing needs of nursing homes and home health programs.
Respiratory therapists	46,000	45	21,000	Employment expected to grow faster than average due to the importance of respiratory therapy in diagnosis, treatment, and care of patients with cardiopulmonary problems. Opportunities should be excellent for experienced therapists and for graduates of accredited programs.
Speech pathologists and audiologists	42,000	29	12,000	Employment expected to increase about as fast as average. Emphasis on early recognition and treatment of speech and hearing problems in children will continue to stimulate demand in schools.

Notes appear at the end of the table.



CLUSTER**Subgroup****Occupation****Estimated
employment
1982¹****Percent
change in
employment
1982-95¹****Numerical
change in
employment
1982-95¹****Employment prospects****HEALTH
TECHNOLOGISTS AND
TECHNICIANS**

Clinical laboratory technologists and technicians	209,000	40	83,000	Employment expected to grow faster than average due to the importance of laboratory tests in medical diagnosis and treatment, the health care needs of a growing and aging population, and broad coverage of clinical laboratory services under public and private health insurance.
Dental hygienists	69,000	43	30,000	Employment expected to grow faster than average because of expanding population and growing awareness of importance of regular dental care. However, if the increasing supply of dentists leads to smaller patient loads, dentists may choose to perform more services themselves and hire fewer hygienists.
Electrocardiograph technician	21,000	37	7,700	Employment expected to grow faster than average because of the importance of the electrocardiograph in diagnosing heart disease and monitoring cardiac conditions. Opportunities will be best for those with post-secondary school training.
Electroencephalographic technologists	5,500	41	2,300	Employment expected to grow faster than average due to the use of EEG's in surgery, diagnosis, monitoring patients with brain disease, and research. Opportunities are expected to be best for registered technologists and those with formal training.
Health record technicians	22,000	43	9,400	Employment expected to grow faster than average due to the vast amount of paperwork associated with health care and changes in hospital record-keeping procedures in response to the new Medicare reimbursement system that will require more accurate and complete medical records. The outlook for technicians with a 2-year associate degree is excellent.
Licensed practical nurses	594,000	37	220,000	Employment expected to grow faster than average as demand for health care continues to grow rapidly. Many job openings are expected in nursing homes, home health agencies, and private duty nursing.
Radiologic technologists	110,000	43	47,000	Employment expected to grow faster than average as new uses are found for "imaging" technologies in the diagnosis and treatment of diseases. Opportunities should be generally favorable, with strong demand for radiation therapy technologists and nuclear medicine technologists in many areas.
Surgical technicians	35,000	40	14,000	Employment expected to grow faster than average due to the increasing number of operations and expanding role of surgical technicians. Prospects will be best for graduates of formal training programs or certified surgical technicians.

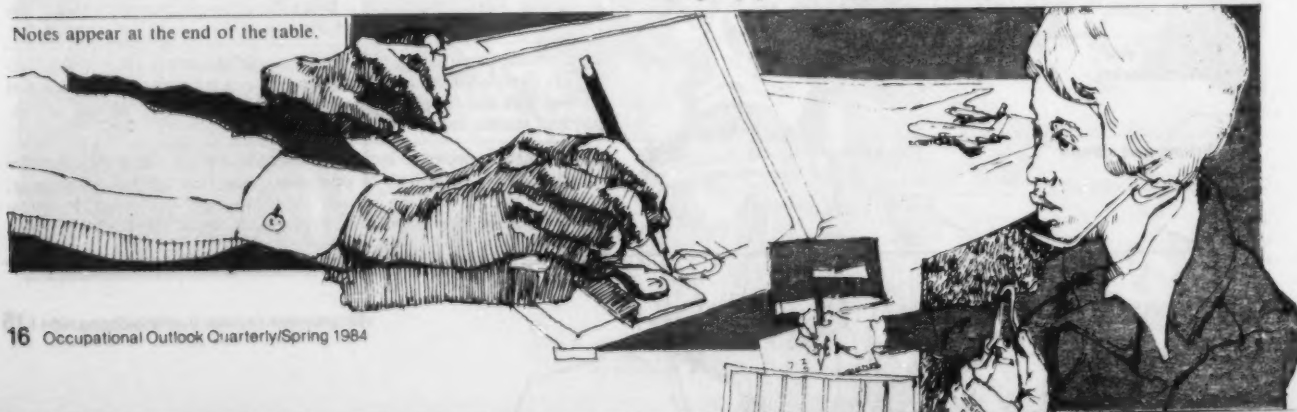
**WRITERS, ARTISTS,
AND ENTERTAINERS****Communications
occupations**

Public relations specialists	90,000	29	26,000	Employment expected to grow about as fast as average as corporations, associations, medical centers, and other large organizations expand public relations efforts. Competition for jobs is likely to be keen.
Radio and television announcers and newscasters	55,000	28	15,000	Employment expected to increase about as fast as average as new stations are licensed and as more cable television systems develop their own programming. Keen competition is likely for openings, however. Best prospects are expected in small cities and towns.
Reporters and correspondents	51,000	29	15,000	Employment expected to grow about as fast as average. Best opportunities are likely to be found on newspapers and magazines in small towns and suburbs and for journalism graduates who have specialized in news-editorial studies and completed an internship.
Writers and editors	120,000	35	42,000	Employment expected to increase faster than average due to increased demand for salaried writers in publishing, communications, advertising, and other industries. Keen competition is expected to continue. Job prospects should be best in technical writing and business and trade publications.

Job Outlook

CLUSTER Subgroup Occupation	Estimated employment 1982'	Percent change in employment 1982-95'	Numerical change in employment 1982-95'	Employment prospects
WRITERS, ARTISTS, AND ENTERTAINERS—continued				
Design occupations				
Commercial and graphic artists and designers	133,000	26	34,000	Keen competition expected to continue. Those with above average talent and skills will be in demand.
Designers	180,000	41	73,000	Employment is expected to grow faster than the average. However, because many people are attracted to the field, stiff competition is expected, except in floral design.
Photographers	86,000	18	16,000	Employment expected to grow more slowly than average. Portrait and commercial photographers are likely to face keen competition. Areas such as law enforcement and scientific and medical research photography should offer the best opportunities.
Performing artists				
Actors and actresses	34,000	43	15,000	Employment expected to grow faster than average, but overcrowding in this field will persist.
Dancers	7,700	43	3,300	Although employment expected to grow faster than the average, keen competition is expected to continue.
Musicians	124,000	25	31,000	Although employment expected to grow about as fast as average, keen competition is expected to continue.
Singers	21,000	21	4,400	Employment expected to grow about as fast as the average, but keen competition is expected to continue.
TECHNOLOGISTS AND TECHNICIANS EXCEPT HEALTH				
Air traffic controllers	21,000	4	900	Despite the increase in the number of aircraft, employment is expected to show little or no change because of the greater use of automated control equipment. Keen competition is expected; opportunities are best for college graduates and those with experience as controllers, pilots, or navigators.
Broadcast technicians	17,000	27	4,500	Employment expected to increase about as fast as average as new radio and television stations are licensed and as more cable television systems develop their own programs. Job competition will continue to be keen, however, and prospects will be best in small cities and towns.
Computer programmers	266,000	77	205,000	Employment expected to grow much faster than average as computer usage expands. Prospects will be best for college graduates with majors in computer and information science and experience or training in fields such as accounting, management, engineering, or science. People with a 2-year degree or less training and no experience may face competition.
Drafters	302,000	5	15,000	Little change expected in employment despite industrial growth and increasingly complex design problems. Widespread use of computer-aided design equipment will greatly increase productivity.

Notes appear at the end of the table.



CLUSTER
Subgroup

Estimated employment 1982¹
Percent change in employment 1982-95¹
Numerical change in employment 1982-95¹

Employment prospects

Electrical and electronics technicians	366,000	61	222,000	Employment expected to increase much faster than the average due to increased demand for computers, communications equipment, military electronics, and electronic consumer goods. Opportunities will be best for graduates of post-secondary technical programs.
Legal assistants	45,000	94	43,000	Employment expected to grow much faster than average as the use of legal assistants to aid lawyers increases. Prospects are likely to be best for persons with formal legal assistant training.
Library technicians	29,000	10	3,000	Employment expected to grow more slowly than the average. Best job prospects are likely to be in special libraries.
Tool programmers, numerical control	12,000	78	9,700	Employment expected to rise much faster than the average due to the increased use of numerical control and other types of automated machining equipment.

MARKETING AND SALES OCCUPATIONS

Cashiers	1,570,000	47	744,000	Plentiful job opportunities expected as employment grows faster than average and replacement needs remain high. Many openings will be part time.
Insurance agents and brokers	361,000	25	90,000	Employment expected to grow about as fast as average as insurance sales expand. Opportunities will be best for ambitious persons who enjoy selling and develop expertise in many different types of insurance and investments.
Manufacturers' sales workers	414,000 ²	15	64,000	Employment expected to grow more slowly than the average, as some manufacturers switch to wholesalers to sell their products.
Real estate agents and brokers	337,000	33	112,000	Employment expected to rise faster than average in response to growing demand for housing and other properties. However, the field is highly competitive. Well-trained, ambitious people who enjoy selling should have the best chance for success.
Retail trade sales workers	3,367,000 ²	27	898,000	Employment expected to grow about as fast as average. High turnover should create many openings for full-time, part-time, and temporary workers.
Securities sales workers	78,000	36	28,000	Employment expected to grow faster than average as economic growth and rising personal incomes increase the funds available for investment. However, the field will continue to be competitive, and many beginners may be unable to establish a sufficient clientele.
Travel agents	62,000	43	26,000	Employment expected to grow faster than average. Because travel expenditures often depend on business conditions, job opportunities are sensitive to economic changes.
Wholesale trade sales workers	1,093,000 ²	30	327,000	Employment expected to grow slightly faster than average as wholesalers sell a wider variety of products and improve customer services.



Job Outlook

CLUSTER Subgroup Occupation	Estimated employment 1982'	Percent change in employment 1982-95'	Numerical change in employment 1982-95'	Employment prospects
ADMINISTRATIVE SUPPORT OCCUPATIONS, INCLUDING CLERICAL				
Bank tellers	539,000	29	154,000	Employment expected to grow about as fast as average. Full time and part time job openings should be plentiful.
Bookkeepers and accounting clerks	1,713,000	16	272,000	Employment expected to grow more slowly than average due to technological change such as the increased use of computers. Nevertheless, because the occupation is so large, job openings will be numerous.
Computer operating personnel	580,000	27	157,000	Employment of computer and peripheral equipment operators expected to rise much faster than average as the use of computers expands. Employment of data-entry operators is expected to decline, however, due to the use of more efficient direct data entry techniques.
Mail carriers	234,000	- 5	- 11,000	Little change expected in employment as new routing programs and more centralized mail delivery offset the growing volume of mail.
Postal clerks	307,000	- 18	- 55,000	Employment expected to decline due to increasing automation of mail processing. Keen competition anticipated for jobs.
Receptionists	594,000	45	267,000	Employment expected to grow faster than average as business, personal, and professional services expand. Job prospects should be most favorable for those with typing and other office skills.
Reservation agents and transportation ticket agents	108,000	2	2,100	Little change expected in employment as automation and other changes improve productivity. Competition is anticipated for jobs.
Secretaries	2,441,000	29	719,000	Employment expected to grow about as fast as average despite the spread of office automation, reflecting information processing needs of rapidly growing industries including business services, finance, and health care. Numerous job opportunities are expected because the occupation is so large. Prospects for part-time and temporary work are likely to be excellent.
Shipping and receiving clerks	365,000	18	66,000	Employment expected to increase more slowly than average due to automation and the concentration of these clerks in slow-growing industries, principally manufacturing and wholesale trade. Many job opportunities are nonetheless expected because the occupation is large.
Stenographers	270,000	- 7	- 20,000	Employment expected to decline; however, demand should be strong for court reporters.
Teacher aides	463,000	28	130,000	Employment expected to grow about as fast as average as enrollments begin to rise in elementary schools in the mid-1980's and in secondary schools after 1990. Continued emphasis on special education will also increase demand for aides.
Telephone operators	323,000	8	25,000	Employment expected to grow more slowly than average due to the introduction of new technology.
Typists	990,000	16	155,000	Employment expected to increase more slowly than the average, due to office automation. Numerous job openings are anticipated because of the large size of the occupation. Demand is likely to be particularly strong for typists who can handle a variety of office duties and operate word-processing equipment.

Notes appear at the end of the table.



CLUSTER Subgroup Occupation	Estimated employment 1982 ¹	Percent change in employment 1982-95 ¹	Numerical change in employment 1982-95 ¹	Employment prospects
SERVICE OCCUPATIONS				
Protective service occupations				
Correction officers	111,000	33	36,000	Employment expected to increase faster than average as correctional facilities expand and additional officers are hired to provide closer supervision of inmates.
Firefighters	252,00	9	22,000	Employment expected to increase more slowly than the average as slow growth in local government spending limits employment growth. Keen competition is likely for jobs in urban areas; better opportunities in smaller communities.
Guards	637,000	47	300,000	Employment expected to grow faster than average due to increased concern over crime and vandalism. Opportunities are likely to be best in guard and security agencies and on night shifts.
Police and detectives, public service	549,000	8	43,000	Employment expected to rise more slowly than the average as slow growth in local government spending limits employment growth. Keen competition is expected with prospects best for applicants who have some college training in law enforcement.
Food and beverage preparation and service occupations				
Bartenders	384,000	32	121,000	Employment expected to grow faster than the average as many new bars, hotels, and restaurants open. Job opportunities expected to be plentiful.
Cooks and chefs	1,211,000	33	402,000	Employment expected to grow faster than the average as population growth, higher incomes, and more leisure time allow people to dine out more. Particularly fast growth is expected in institutions serving the expanding elderly population.
Waiters and waitresses	1,665,000	34	562,000	Employment expected to grow faster than the average as dining out increases. High job turnover in this very large occupation will result in numerous full-time and part-time job openings.
Health service occupations				
Dental assistants	153,000	42	64,000	Employment expected to grow faster than average because of greater demand for dental care and dentists' desire to increase productivity by using assistants for routine tasks. If the abundant supply of dentists leads to lower patient loads, however, dentists may hire fewer assistants and employment would grow more slowly than currently anticipated.
Medical assistants	100,000	47	48,000	Employment expected to grow faster than average due to an increase in the number of physicians. Very good job prospects are expected for medical assistants with formal training, experience, or both.
Nursing aides, orderlies, and attendants	1,218,000	35	423,000	Employment expected to grow faster than average due to increasing demand for health care of a larger and longer-living population. Numerous job openings are expected, especially in nursing homes and other long-term care facilities.



Job Outlook

CLUSTER

Subgroup

Occupation

Estimated
employment
1982¹

Percent
change in
employment
1982-95¹

Numerical
change in
employment
1982-95¹

Employment prospects

SERVICE

OCCUPATIONS—continued

Cleaning service occupations

Building custodians	2,828,000	28	779,000	Employment expected to grow about as fast as average as the number of office buildings, factories, hospitals, schools, apartment houses, and other buildings increases.
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Personal service occupations

Barbers	115,000	10	12,000	Employment expected to grow more slowly than average. Job prospects are best for hairstylists.
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Cosmetologists	519,000	20	103,000	Employment expected to grow about as fast as average as demand for beauty shop services rises. Opportunities for part-time work should be very good.
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Flight attendants	54,000	29	15,000	Employment expected to grow about as fast as average as airline travel increases. Competition for jobs is likely to remain very keen.
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MECHANICS AND REPAIRERS

Vehicle and mobile equipment mechanics and repairers

Aircraft mechanics	108,000	19	20,000	Employment expected to grow more slowly than the average due to labor-saving advances in aircraft maintenance. Opportunities will be best in general aviation; keen competition is expected for airline jobs. Opportunities in the Federal Government depend upon defense spending.
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Automotive body repairers	155,000	26	41,000	Employment expected to increase as fast as average due to growing numbers of vehicles and traffic accidents.
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Automotive mechanics	844,000	38	324,000	Employment expected to increase faster than average due to the growing number of automobiles. Job opportunities will be plentiful for persons with formal training.
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Diesel mechanics	173,000	28	48,000	Employment expected to increase about as fast as average due to the growing use of diesel-powered trucks, automobiles, and equipment. Opportunities are best for persons who complete formal training.
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Farm equipment mechanics	26,000	5	1,400	Little or no change in employment is expected as growth in use of farm equipment is slowed by the continued consolidation of farmland into fewer and larger farms. Best opportunities for persons with formal training.
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Electrical and electronic equipment repairers

Appliance installers and repairers	80,000	17	13,000	Employment expected to grow more slowly than average as the increasing use of electronic parts lessens the need for repairers. Job prospects are best for those with a strong background in electronics.
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Communications equipment mechanics	92,000	3	3,000	Little change in employment expected as technological improvements limit growth.
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Computer service technicians	55,000	97	53,000	Employment expected to grow much faster than average as more computer equipment is used.
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Line installers and cable splicers	195,000	27	53,000	Employment expected to grow about as fast as average due to increasing demand for electricity and telephone service by a growing population.
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Radio and television service technicians	80,000	27	22,000	Employment expected to increase about as fast as average as the number of home electronic products such as television sets, video games, radios, phonographs, and tape and video recorders increases.
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Telephone and PBX installers and repairers	134,000	28	37,000	Employment expected to grow about as fast as average due to the increasing amount of telephone equipment in use. Prospects are likely to be best for persons able to work with PBX, CENTREX, and other sophisticated systems.
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Notes appear at the end of the table.

CLUSTER

Subgroup	Estimated employment 1982'	Percent change in employment 1982-95'	Numerical change in employment 1982-95'	Employment prospects
Other mechanics and repairers				
Air-conditioning, refrigeration, and heating mechanics	168,000	33	55,000	Employment expected to increase faster than average. Beginning mechanics may face competition for the highest paying jobs. Graduates of training programs that emphasize hands-on experience will have the best opportunities.
Coin machine servicers and repairers	31,000	28	8,700	Employment expected to grow about as fast as average due to the growing number of coin-operated machines in service. Excellent prospects are expected for persons with a background in electronics.
Industrial machinery repairers	330,000	29	95,000	Employment expected to grow about as fast as average due to the need to maintain complex machinery used increasingly in manufacturing, coal mining, oil exploration, and other industries.
Millwrights	91,000	33	30,000	Employment expected to increase faster than average due to construction of new plants, improvements in existing plants, and installation and maintenance of increasingly complex machinery.
Musical instrument repairers	14,000	23	3,100	Employment expected to increase about as fast as average due to the increasing number of instruments in use.
Office machine repairers	56,000	72	40,000	Employment expected to grow much faster than average as the number of machines increases. Employment prospects will be good.
CONSTRUCTION OCCUPATIONS				
Bricklayers and stonemasons	124,000	33	41,000	Employment expected to grow faster than average as more homes, factories, offices, and other structures that use brick are built.
Carpenters	863,000	29	247,000	Employment expected to grow about as fast as average due to increasing construction of new structures and alteration and maintenance of old ones. Carpenters with all-round training will have the best prospects.
Cement masons and terrazzo workers	95,000	43	41,000	Employment expected to increase faster than average due to growing construction activity and greater use of concrete as a building material.
Drywall applicators and tapers	76,000	41	31,000	Employment expected to grow faster than average due to increasing commercial and residential construction.
Electricians	542,000	32	173,000	Employment expected to increase faster than average as more electricians are needed to install electrical fixtures and wiring in new and renovated buildings and to maintain electrical systems used by industry.
Floor covering installers	79,000	29	23,000	Employment expected to increase about as fast as average due to widespread use of resilient floor coverings and carpeting. Opportunities are likely to be best for persons able to install both carpeting and resilient flooring.
Glaziers	41,000	35	14,000	Employment expected to increase faster than average as demand increases for new residential and commercial buildings.
Insulation workers	47,000	44	20,000	Employment expected to grow faster than average as greater emphasis is placed upon energy efficiency of houses and other buildings.
Ironworkers	93,000	39	36,000	Employment expected to increase faster than average due to growing demand for nonresidential buildings, power transmission towers, and highway and bridge maintenance.
Painters	362,000	23	82,000	Employment expected to grow about as fast as average as more workers are needed to paint new and existing buildings and industrial structures.

Job Outlook

CLUSTER Subgroup Occupation	Estimated employment 1982 ¹	Percent change in employment 1982-95 ¹	Numerical change in employment 1982-95 ¹	Employment prospects
CONSTRUCTION OCCUPATIONS—continued				
Paperhangers	19,000	24	4,700	Employment expected to increase about as fast as average due to the continued popularity of wallpaper and other wall coverings.
Plasterers	20,000	7	1,500	Employment expected to grow more slowly than average due to continued preference for drywall instead of plaster. Employment opportunities will be better than they were in the 1960's and 1970's, however, as plaster regains some popularity and older structures with plaster walls are renovated.
Plumbers and pipefitters	388,000	34	131,000	Employment expected to grow faster than average as a result of increased construction activity and the need to repair and modernize existing plumbing and piping.
Roofers	102,000	27	27,000	Employment expected to grow about as fast as average as a result of new construction and the need to replace existing roofs.
Sheet-metal workers	87,000 ²	46	40,000	Employment expected to increase faster than average due to use of air-conditioning and heating ducts and other sheet-metal products in new construction and high demand for more efficient air-conditioning and heating systems in existing buildings.
Tilesetters	20,000	35	6,800	Employment expected to increase faster than average as tile is increasingly used in homes and commercial buildings.
PRODUCTION OCCUPATIONS				
Blue collar worker supervisors	1,200,000	27	320,000	Employment expected to increase about as fast as average. Nonmanufacturing industries—especially trade and services—will account for a large part of the increase.
Precision production occupations				
Boilermakers	40,000	8	3,000	Employment expected to grow more slowly than average due to the anticipated slow growth of industries that use boilers. Opportunities are expected to be best for experienced workers to maintain and repair existing equipment.
Bookbinders	30,000	20	6,100	Employment expected to grow about as fast as average in response to growth in the printing industry. Opportunities for machine bookbinders are expected to be better than those for hand bookbinders.
Butchers and meatcutters	191,000	-6	-12,000	Employment expected to decline because of centralized cutting and wrapping of meat for several stores at one location and cutting and boxing of meat in factories.
Compositors and typesetters	104,000	-7	-7,600	Employment expected to decline due to computerization of composition and typesetting. Job opportunities will be scarce.
Dental laboratory technicians	51,000	26	13,000	Employment expected to grow about as fast as average due to rising incomes, growing popularity of orthodontal work, and the increasing number of older persons who require dentures. Intensified competition among dentists could lead to more aggressive marketing of orthodontal and restorative dentistry, causing demand for dental laboratory services to rise even more. Excellent opportunities are expected for graduates of approved programs.
Dispensing opticians and ophthalmic laboratory technicians	39,000	24	9,400	Employment expected to increase about as fast as average as demand for corrective lenses rises. The employment of dispensing opticians is expected to grow more rapidly than that of ophthalmic laboratory technicians because of productivity improvements in optical laboratories.

CLUSTER Subgroup Occupation	Estimated employment 1982'	Percent change in employment 1982-95'	Numerical change in employment 1982-95'	Employment prospects
Furniture upholsterers	37,000	8	3,100	Employment expected to increase more slowly than average as people buy new furniture instead of reupholstering the old.
Hand molders	9,100	18	1,600	Employment expected to increase more slowly than average. Although strong demand is likely for metal castings, labor-saving innovations will limit employment growth.
Jewelers	30,000	13	4,000	Employment expected to grow more slowly than average. Best prospects are likely to be in jewelry stores. Attending a good technical school can improve job prospects.
Job and die setters	95,000	27	26,000	Employment expected to increase about as fast as average as demand for machined goods grows. Numerically controlled machine tools are expected to limit the need for additional workers.
Lithographers and photoengravers	67,000	29	20,000	Employment is expected to increase faster than average for lithographers and decline for photoengravers in response to the shift from letterpress to offset printing. Job opportunities will be best for graduates of post-secondary school programs in printing technology.
Machinists and layout markers	236,000	26	62,000	Employment expected to increase about as fast as average due to higher demand for machined metal parts. However, technological developments, such as computer controlled machine tools, are expected to keep employment from growing as fast as the demand for machined parts.
Patternmakers	13,000	17	2,300	Employment expected to grow more slowly than average. Improvements in metal casting technology will allow production to increase faster than employment.
Photographic process workers	67,000	17	11,000	Employment expected to grow more slowly than average due to the increased use of automated processing equipment.
Shoe repair occupations	16,000	15	2,400	Employment expected to grow more slowly than average. Job prospects should be good, nonetheless; because training is difficult to obtain, experienced or trained repairers are in demand.
Toolmakers and diemakers	154,000	21	33,000	Employment expected to grow about as fast as average due to higher demand for machined metal parts, although the use of computer controlled machine tools and improvements in tool design are expected to limit the need for new workers. Due to the long training period for these workers, temporary shortages may occur in areas with many manufacturing firms.
Plant and system operators				
Stationary engineers	58,000	4	2,200	Little change in employment expected despite expansion in industry and growth in the number of buildings, due to greater automation of equipment.
Water and sewage treatment plant operators	72,000	10	7,400	Employment expected to grow more slowly than average due to a slow-down in construction and modernization of treatment plants. Job prospects are likely to be best for those with formal training.
Machine operators, tenders, and setup workers				
Machine tool operators	914,000	22	200,000	Employment expected to increase about as fast as average as the metal-working industries recover from the 1981-82 recession. Over the long run, the use of faster and more versatile automatic machine tools will tend to limit the demand for unskilled operators.
Printing press operators	174,000	18	32,000	Employment expected to increase more slowly than average as faster and more efficient presses accommodate growing output. Competition for jobs is expected.

Job Outlook

CLUSTER

Subgroup

Occupation

Estimated
employment
1982¹

Percent
change in
employment
1982-95¹

Numerical
change in
employment
1982-95¹

Employment prospects

PRODUCTION OCCUPATIONS—continued

Fabricators, assemblers, and handworking occupations

Assemblers

1,313,000

25

332,000

Employment expected to increase about as fast as average. Since most jobs are in durable goods industries, economic conditions and national defense spending will continue to affect job prospects.

Automotive painters

36,000

46

17,000

Employment expected to increase faster than average due to the growing number of vehicles and traffic accidents.

Welders and flamecutters

490,000

21

105,000

Employment expected to grow about as fast as average. Automated welding systems are likely to slow growth in some industries, but highly skilled welders will continue to be in demand.

TRANSPORTATION AND MATERIAL MOVING OCCUPATIONS

Airplane pilots

80,000

29

23,000

Employment expected to grow about as fast as average due to increased air travel. Keen competition, especially for jobs with the major airlines. Opportunities are expected to be best for college graduates with flying experience.

Busdrivers

473,000

17

78,000

Employment expected to increase more slowly than average, but job openings will be plentiful for school busdrivers.

Construction machinery operators (operating engineers)

202,000²

44

89,000

Employment expected to grow faster than average due to increasing construction activity. Job opportunities should be plentiful, especially in highway and bridge maintenance and the construction of mass transit systems.

Industrial truck operators

385,000

18

70,000

Employment expected to increase more slowly than average due to increased use of computerized material handling systems.

Truckdrivers

2,402,000

24

578,000

Employment expected to grow about as fast as the average due to growth in the amount of freight being shipped. Keen competition is likely for jobs in this high-paying occupation.

HANDLERS, EQUIPMENT CLEANERS, HELPERS, AND LABORERS

Construction laborers and helpers

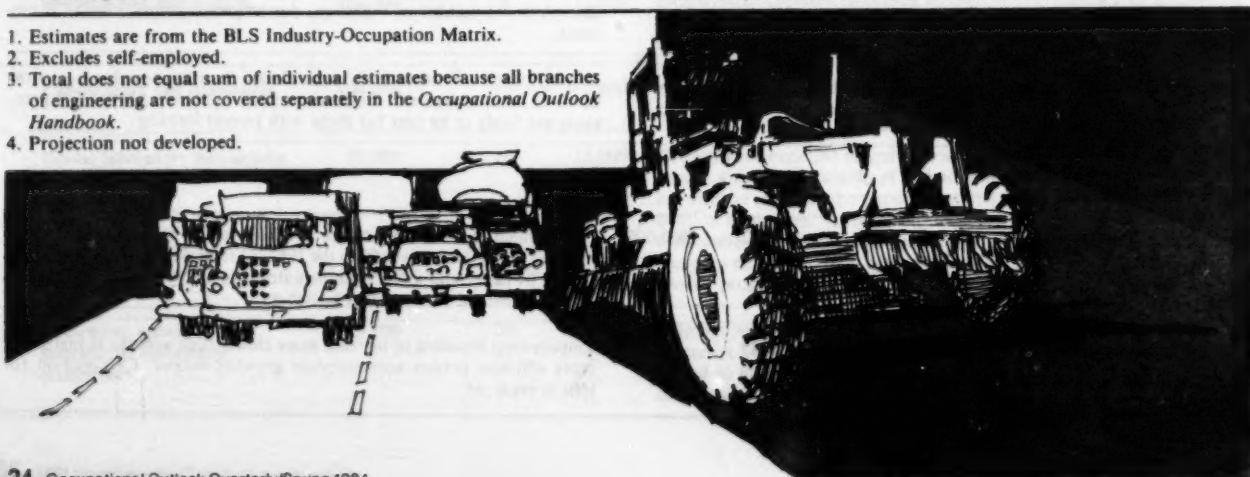
576,000

29

165,000

Employment expected to grow about as fast as average. Job openings should be plentiful because turnover is high.

1. Estimates are from the BLS Industry-Occupation Matrix.
2. Excludes self-employed.
3. Total does not equal sum of individual estimates because all branches of engineering are not covered separately in the *Occupational Outlook Handbook*.
4. Projection not developed.



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If you are someone who is

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... contemplating a career change,
... involved in education planning,
... involved in worker training or displaced-worker retraining,
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